U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF SOILS—MILTON WHITNEY, Chief.

IN COOPERATION WITH THE GEORGIA STATE COLLEGE OF AGRICULTURE, ANDREW M. SOULE, PRESIDENT; DAVID D. LONG, IN CHARGE SOIL SURVEY.

SOIL SURVEY OF MITCHELL COUNTY, GEORGIA.

BY

DAVID D. LONG, OF THE GEORGIA STATE COLLEGE OF AGRICULTURE, IN CHARGE, AND MARK BALDWIN, EARL D. FOWLER, H. W. HAWKER, AND H. V. GEIB, OF THE U. S. DEPARTMENT OF AGRICULTURE.

W. EDWARD HEARN, INSPECTOR, SOUTHERN DIVISION.

[Advance Sheets, Field Operations of the Bureau of Soils, 1920.]

WASHINGTON:
GOVERNMENT PRINTING OFFICE.

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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS,
Washington, D. C., November 8, 1921.

SIR: Under the cooperative agreement with the Georgia State College of Agriculture, Andrew M. Soule, president, a soil survey of Mitchell County was carried to completion during the field season of 1920.

I have the honor to transmit herewith the manuscript and map covering this work and to recommend their publication as advance sheets of Field Operations of the Bureau of Soils for 1920, as authorized by law.

Respectfully,

MILTON WHITNEY,
Chief of Bureau.

Hon. H. C. WALLACE,
Secretary of Agriculture.

CONTENTS.

ILLUSTRATIONS.

FIGURE.

MAP.

SOIL SURVEY OF MITCHELL COUNTY, GEORGIA.

By DAVID D. LONG, of the Georgia State College of Agriculture, In Charge, and MARK BALDWIN, EARL D. FOWLER, H. W. HAWKER, and H. V. GEIB, of the U. S. Department of Agriculture.—Area Inspected by W. EDWARD HEARN.

DESCRIPTION OF THE AREA.

Mitchell County is situated in the southwestern part of Georgia, 25 miles north of the Florida State line. Its area is 506 square miles or 323,840 acres.

The surface of the county is generally level to rolling, without prominent valleys or hills. There are two distinct types of topography, separated by a well-marked escarpment which has a general northeast-southwest trend. The region to the southeast of this escarpment, occupying the southeastern quarter of the county, is generally quite rolling, with distinct stream ways, small V-shaped valleys in places, and very few "sinks" or undrained depressions. The greater part of the remainder of the county is level to undulating with sluggish, intermittent streams, broad, flat valleys, or "sloughs," and numerous undrained depressions or sinks. Along the Flint River there are level overflow lands or first bottoms, and at varying elevations higher terraces or second bottoms. The terraces are generally level, though modified in places by sinks, old channels, and wind-blown sand ridges and small dunes.

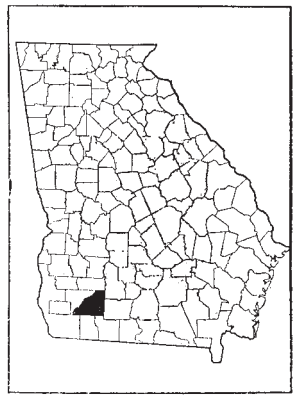

FIG. 1.—Sketch map showing location of the Mitchell County area, Georgia.

The rolling country of the southeastern part of the county is considerably higher than the area of smoother topography. The towns of Pelham, and Meigs (Thomas County) are respectively 368[1] and 354 feet above sea level. The general elevation of the lower part of the county is indicated by the elevations at Camilla, 181 feet; at Flint, 188 feet; and at Dewitt, 182 feet. Baconton, situated on a high terrace of the Flint River, is 177 feet above sea level. The highest elevation, 370 feet, along the Atlantic Coast Line Railroad in the county is 0.8 mile south of Pelham; the lowest elevation along this railroad, 172 feet, is on a high terrace 1.2 miles south of Baconton.

[1] Elevations of ground at Atlantic Coast Line Railroad depots.

The lower terraces and bottoms of Flint River lie between 100 and 150 feet above sea level.

There are two distinct drainage systems in Mitchell County, corresponding to the two topographic regions. The lower country, comprising the greater part of the county, is drained chiefly by tributaries of Flint River, which forms the northwest boundary of the county, an exception being Big Slough, a tributary of Ochlockonee River. The streams are sluggish, with poorly defined channels and broad, poorly drained valleys, in many cases so wet as to be locally known as sloughs. There are numerous undrained depressions or sinks, many of which hold water part of the year. Most of the upland of this region, however, is well drained, especially in the southwestern part of the county. This is due to underground drainage and to the capacity of the soil and subsoil for absorbing water. The higher rolling region of the southeastern part of the county is drained by tributaries of Ochlockonee River. The streams ways here are usually well defined, and many of the valleys are V-shaped. Along the slopes of the smaller stream valleys of this region are areas that are wet most of the year with seepage water and constitute a considerable acreage of poorly drained land. Practically all the wet land of the county can be drained; much of it economically, some of it at considerable expense.

Mitchell County was organized in 1857. The earlier settlements were mostly along the river. The settlers were native Americans from older sections of Georgia, Virginia, and the Carolinas. With the development of the turpentine and lumber industries there was a marked increase in immigration, followed by an expansion of agricultural, commercial, and industrial enterprises. The population has remained native American, the later settlers coming chiefly from middle and northern Georgia. There has always been a large negro population. The population was 9,392 in 1880, 10,906 in 1890, 14,767 in 1900, 22,114 in 1910, and 25,588 in 1920. Of the present population, 89.7 per cent is rural, there being only one town with more than 2,500 inhabitants.

Camilla, the county seat, is located near the center of the county and has a population of 2,136. Its interests are chiefly agricultural, as it is one of the important local markets for the products of the farms. Pelham, in the southeastern part of the county, is a growing agricultural and industrial center. Its population is 2,640. Baconton, in the northern part of the county, on the Atlantic Coast Line Railroad, is in the pecan-growing region of the county, and has 568 inhabitants. Sale City, in the eastern part, has a population of 537.

The Thomasville & Albany Branch of the Atlantic Coast Line Railroad traverses the county from north to south, passing through

Baconton, Camilla, and Pelham. The Hawkinsville & Florida Southern from Camilla passes through the northeastern part of the county. The Flint River & Northeastern Railroad, connecting at Pelham with the Atlantic Coast Line, traverses the eastern part of the county.

The public road system of the county is being extended and improved. At present, graded sand-clay roads reach into all parts of the county. A branch of the Dixie Highway traverses the county from north to south through Baconton, Camilla, and Pelham.

Camilla, Pelham, and the smaller towns of the county furnish markets for cotton, live stock, peanuts, velvet beans, and other agricultural products.

CLIMATE.

The data shown in the table below, giving the normal and extreme temperatures and precipitation by months and seasons and for the year, are taken from the records of the Weather Bureau station at Albany, 10 miles north of Mitchell County, and are representative of climatic conditions throughout the county.

Normal monthly, seasonal, and annual temperature and precipitation at Albany, Dougherty County.

(Elevation, 230 feet.)

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year (1896).	Total amount for the wettest year (1907).
	°F.	°F.	°F.	Inches.	Inches.	Inches.
December	51.1	84	12	3.77	1.78	7.39
January	48.9	82	13	3.72	3.66	2.54
February	50.5	84	− 2	5.45	8.99	3.54
Winter	50.2	84	− 2	12.94	14.43	13.47
March	61.1	93	27	4.91	4.68	2.19
April	66.7	98	34	3.51	.40	7.99
May	74.8	103	40	3.64	2.14	3.15
Spring	67.5	103	27	12.06	7.22	13.33
June	81.4	105	49	4.23	1.85	3.36
July	82.9	106	60	5.68	7.66	8.90
August	82.0	102	61	6.10	2.00	11.64
Summer	82.1	106	49	16.01	11.51	23.90
September	77.8	102	45	3.11	2.43	9.12
October	67.5	98	30	2.27	2.10	.19
November	57.8	90	21	2.28	2.18	4.66
Fall	67.7	102	21	7.66	6.71	13.97
Year	66.9	106	− 2	48.67	39.87	64.67

The climate is characterized by short, mild winters and long, warm summers. There are no long periods of extreme heat or severe cold. During the hottest weather of the summer the nights are generally pleasant. The coldest weather of the winter is usually marked only by frosts and thin ice, forming at night and disappearing the following day. Normally the growing season, free from killing frosts, is about eight months. There is a normal grazing season of nine months, which may be lengthened to the entire year by planting winter grazing crops in the fall. The average date of the last killing frost in the spring at Albany is March 9; of the first in the fall, November 11.

The mean annual rainfall, 48.67 inches, is ample for all crops. Normally its distribution is favorable to agriculture.

Briefly, the climate of Mitchell County is well suited to the production of a wide range of staple and special crops and to a profitable live-stock industry.

AGRICULTURE.

The economic stages through which Mitchell County has passed in its development are similar to those which characterize the general stages of development of all south Georgia. The territory included in the county was originally forested with a heavy growth of longleaf pine on the uplands and with many different species of hardwoods along the stream courses. Settlement developed first in the western part of the county, the eastern section being considered better for grazing cattle than for the production of field crops. The land in this eastern section has been occupied for farming in comparatively recent years. The agriculture of the early settlers was confined principally to the production of crops necessary to supply the needs of the home, and this continued until markets developed where some of the supplies could be obtained in trade more economically than they could be produced. The chief crops of the early agriculture were corn, wheat, rye, oats, buckwheat, and potatoes. Cattle and hogs were owned by each settler and were allowed to graze in the open forest. Cattle constituted one of the first articles of trade. With the development of transportation facilities came also the use of the forest in producing naval stores, later followed by lumbering. By these operations large tracts of land were partly cleared and made ready for agricultural occupation.

For a considerable time prior to the Civil War cotton was a staple crop, steadily growing in importance. Following the Civil War, because of the great demand for a cash crop the greater part of the agricultural land was utilized in producing cotton, and it soon became the leading crop and the one cash crop. All business interests were centered about the production of this staple. This condition

prevailed until 1917, when the cotton boll weevil so materially reduced the yield that out of sheer necessity the agricultural system was radically changed.

Cotton is one of the important products in the present cropping system, but the acreage has been materially reduced. According to the census, 25,629 bales were produced on 56,912 acres in 1909, with an average yield of nearly one-half bale. In 1919, however, the area in cotton was only 50,428 acres, with a production of 13,822 bales, or an average yield per acre of 0.27 bale.

Corn is the second crop in importance. It occupies 35 per cent of the improved farm lands. The 1920 census shows that in 1919 there were 726,507 bushels produced on 60,846 acres, with an average yield of nearly 12 bushels per acre. The corn crop formerly was not sufficient for the local needs of the county, but within recent years a small surplus has been produced. Most of the crop is utilized on the farm in feeding work stock and hogs. A part of it is ground by local mills for food.

Peanuts now form one of the chief cash crops. The acreage of this crop has been extending by leaps and bounds within the last four years. In 1919, 438,410 bushels were produced on 21,770 acres or an average yield of about 20 bushels per acre. High yields have been obtained locally, some farmers reporting 60 or 70 bushels per acre where the soil is limed and the crop well managed. Peanuts are marketed principally in the near-by towns, where there are peanut-oil mills in connection with the cottonseed-oil mills. The vines are utilized on the farm. It is difficult to harvest the crops cleanly, a proportion of the nuts remaining in the soil. These are usually gathered by hogs, which are allowed to forage in the fields. The crop is also planted especially for pork production.

Sweet potatoes are produced on a large scale and comprise one of the leading cash crops of the county. The acreage devoted to this crop in 1919 is given by the census as 1,237 acres, with a total production of 133,247 bushels, or an average of 107.7 bushels per acre. This supplies all local needs and in addition provides for large shipments to outside markets. The establishing of curing houses has enabled the farmers to increase production, as the crop can be held for a favorable market. Sweet potato culls, those too large or too small for marketing, are utilized chiefly on the farms as food and to a large extent as hog feed. The crop is also grown to some extent especially for hogs.

Oats have been a standard crop since the early days of settlement. The acreage of this crop has been increased to a considerable extent since the advent of the boll weevil. The census reports 1,921 acres in oats in 1919, with a production of 29,111 bushels. The crop is considered more or less uncertain, as dry weather in May usually

makes the yield extremely low. The production about equals the demand for local needs. The crop is used as stock feed, being either fed in the straw or thrashed.

Velvet beans are grown on practically every farm in the county. They make a valuable feed for stock and an excellent means of supplying much needed organic matter to the soil. They are usually planted between the corn rows at the last cultivation. The crop produces a dense mass of long tangled vines, which provides pasturage for cattle and hogs during the winter months. Part of the crop is picked by hand and is ground by local mills for stock feed or is saved for seed.

Cowpeas are also an important crop, being planted in the corn field as a soil renovator, or following oats when intended for hay. Cowpeas are not grown as extensively as velvet beans. There is common complaint that the cowpeas do not fruit well, and a large number of farmers report that the total yield of ripe peas is insufficient for seeding.

Very little wheat is grown. The census reported only 161 acres in wheat in 1919, with a production of 1,809 bushels, or an average of 11.2 bushels per acre. Rye is sown to a limited extent, chiefly to supply winter pasturage for cattle and hogs. The fields rarely exceed an acre or two.

Sugar cane forms an important cash crop. The growing of this crop and the manufacture of sirup is one of the newer industries, but it has already made marked progress. The sirup from the cane grown on the majority of the soils of the county is of extra good quality, having a light color and excellent flavor. In 1919, according to the census, there were 826 acres in sugar cane, which produced 203,008 gallons of sirup, or an average of 245 gallons per acre. The sirup is used locally and shipped to outside markets.

One of the most extensive and highly developed pecan-growing regions in the United States centers around Baconton in the northern part of Mitchell County. The groves all represent plantings of the improved paper-shell varieties of the nut. The industry became established some 15 to 20 years ago, the first extensive plantings being made on the terraces of Flint River and the adjacent uplands in the neighborhood of Baconton. The older groves are situated largely on the Cahaba, Kalmia, Orangeburg, and associated soils. Plantings have been gradually extended to all sections of the county, until at present pecan trees may be found growing on practically all soil types. The industry still centers in the northern part of the county, both from the standpoint of bearing groves and young trees. According to the census there were 40,847 nut trees of bearing age in the county in 1919, with a total production of 254,388 pounds of nuts. Nearly all the nut trees in Mitchell County are pecan trees.

The development of the live-stock industry since the boll weevil became destructive has been rapid. Within a few years a supply which was not equal to the local demand has been changed to a surplus. Each year several carloads of hogs are sold to local packing plants. The quality of the hogs is being improved, principally by the introduction of purebred sires of the Duroc-Jersey, Poland-China, and Hampshire breeds. There are also a number of purebred herds. Cattle have been improved, but not to the same extent as in the case of hogs. The number of purebred cattle has been increasing gradually in the last few years.

With a one-crop system little opportunity was afforded farmers for the recognition of the individual adaptation of the various crops to the different soils of the county. Cotton and corn were grown on all the well-drained soils, the two crops being alternated as far as practicable, but large fields were continuously cropped to cotton for long periods. At present, with the production of a number of other crops on a commercial scale, the farmers are beginning to consider the differences in soils in distributing crops over their farms. It is generally considered desirable to plant sugar cane in the lower situations, which are well supplied with moisture, and on the well-drained parts of the Grady soils, which are found in the Big Slough. The types that have a deep sandy surface soil are commonly selected, where available, for sweet potatoes or peanuts. Corn and cotton are planted on all the well-drained soil types, but the farmers recognize that the several soils differ in productiveness. The Tifton sandy loam and Norfolk sandy loam are the two types generally held to be especially suited for growing corn and cotton.

The farming methods practiced in Mitchell County are similar to those used throughout the southern part of the State. In general, they are improved methods, such as are advocated for increased production under conditions of labor shortage. More improved implements are used now than in the past.

The land for cotton is generally broken with 1-horse or 2-horse plows. The better farmers break the land flat with 2-horse plows and thoroughly prepare it before it is laid off for the distribution of fertilizer and for planting. The fertilizer is usually distributed in a furrow, over which the soil is turned, forming a bed. The seed is planted on the bed immediately over the fertilizer. Some farmers practice level cultivation, a system which does not call for a bedding of the cotton rows. Planting dates for cotton vary from the last of March to April 30. If the season is unfavorable for planting by the latter date, the land is usually used for some other crop, rather than risk a later planting in the presence of the boll weevil. The first cultivation of cotton consists of going over the fields with a spike-tooth harrow or weeder, to break any crust that may form before the

young plants appear. The crop is thinned to a stand with hoes, after which the soil is usually turned toward the cotton with small plows. Subsequent cultivation is done with sweeps and scrapes. The practice of picking the fallen bolls and destroying them to check the weevil is general. Many varieties of cotton are grown, among which the Covington Wiltproof, Toole, Cleveland, Bank Account, and Poor Land are the most popular.

The land is not prepared with the same thoroughness for corn as for cotton, except on the better farms. The seed is usually planted in the water furrow. The planting dates range from the 20th of March to the end of May. Corn is planted at different dates to avoid danger of the whole crop being destroyed by a drought during some part of the hot months. As a rule, the corn is cultivated two or three times with weeders, scrapes, or small turning plows. On the best farms corn is cultivated as frequently as possible, so as to maintain a mulch of loose soil on the surface.

The land for peanuts is thoroughly prepared by plowing flat and harrowing. The rows are laid off 3 feet apart, and the seed is planted 10 inches apart in the drill. The crop is planted some time during the months of April to June. The first cultivation commonly consists of harrowing the land with a spike-tooth harrow. The weeder is used by some instead of the harrow. The young plants are sided up with small turning plows, throwing the soil toward the rows. At least one hoeing is given the crop, after which the soil is again turned toward the plants. Subsequent cultivations are given with sweeps and scrapes. In all, the crop receives from six to eight cultivations. The fertilizer, when used for this crop, is applied at the time of planting.

For sweet potatoes also the land is given very thorough preparation. The rows are laid off by opening a furrow with a small shovel plow. The fertilizer is distributed in this furrow, and the soil is turned over it, forming a ridge, on which the plants are set. Transplanting is done between April 20 and May 1. The cultivation of this crop consists in keeping the ridges built well up until the vines are too long to allow the passage of the plow. As a rule, two or three cultivations are given. The crop is commonly harvested in the fall, usually after the first slight frost, but this practice is being supplanted by the better method of harvesting the potatoes when they are mature, regardless of the season.

The oat crop is planted in a number of different ways. It may be seeded with drills on well-prepared land, or sown broadcast and plowed under, or sown on plowed land and disked in. It may also be drilled in between cotton rows, in which case a small 1-horse drill is used. A small quantity of fertilizer is applied at the time of plant-

ing when the drill is used. It is desirable to have the crop seeded as early in the fall as possible, but in many cases the rush of the farm work prevents sowing until the latter part of November or early in December. The Texas Rust Proof, Fulghum, and Appler are the most common varieties.

When intended for hay, cowpeas are usually sown broadcast on oat stubble and plowed under, or disked in. In corn fields they are sown broadcast or drilled in rows at the time of the last cultivation. Practically no fertilizer is used for cowpeas. Velvet beans are seeded in the corn fields in about the same manner as cowpeas.

Farm equipment in this region generally consists of the light implements usually found on light-textured soils, which are common in this county. Labor-saving machinery is becoming popular. Two-horse plows, double-row cultivators, and improved weeders are found on a large number of farms. Mules are the chief work stock. Tractors are used to a small extent. The farm buildings, especially the barns, are generally small, but of sufficient size to meet the requirements under the prevailing cropping system.

With the change to more diversified cropping there is greater opportunity for the development of crop rotations, which have heretofore been given little consideration. The rotations are generally planned so that no one crop will be planted on the same land two years in succession. A number of different systems are now being evolved, but as yet there is practically no established system for the whole county.

Commercial fertilizers are used for the various crops throughout the county, especially for cotton and potatoes and more or less for corn and peanuts. The 1920 census reports that in 1919, 2,167 farms expended $496,922 for fertilizers. This expenditure was chiefly for ready-mixed grades, the most common mixtures being 9–2–2 or 9–3–3.[2] The average application for cotton ranges from 200 to 400 pounds. Similar quantities of the same grade are applied to corn land by some farmers; others use a small quantity of stable manure in the drills. Some stimulate the growth of cotton with side applications of nitrate of soda in addition to the complete fertilizer applied at the time of planting. The fertilizing of corn is quite variable. Special high-grade fertilizers are being tested in connection with sweet-potato production, but no definite system of fertilization has been evolved up to the present time. Liberal applications are made. Peanuts are fertilized with about the same grade of fertilizer that is used for cotton and in quantities ranging from 200 to 600 pounds per acre. Oats are fertilized chiefly with nitrate of soda, applied as a top dressing.

[2] Percentages respectively of phosphoric acid, nitrogen, and potash.

The total expenditure for wages in 1919 is given as $177,413. The colored population is depended upon chiefly for labor. At the present time (1920) the supply is generally considered scarce. Wages range from $1.50 to $2 a day for men, and about one-half to two-thirds of this amount for lighter work, which is usually done by the negro women and children. By the month, a good hand receives $35 to $45, the use of a house, and certain supplies. Cotton is generally picked at standard rates per hundred pounds of seed cotton.

The census of 1920 reports that there are 3,444 farms in the county, of which 22.9 per cent are operated by owners and 76.7 per cent by tenants. The tenancy is either on a share or standing rent basis. Under the latter the rate is 1,000 pounds of lint cotton per 1-horse farm, which consists of about 25 to 30 acres. Under the share plan the landlord furnishes the stock and implements and one-half the fertilizer, and the tenant furnishes the labor and one-half the fertilizer, the crop being equally divided. The average size of the farms in 1920 is given as 67.3 acres, of which 50.1 acres were classified as improved land. The census reports each tenancy as a farm. There are many individual holdings of more than 1,000 acres in the county.

SOILS.[3]

The soils of Mitchell County are chiefly of Coastal Plain origin. The original material was washed down from the Piedmont region and deposited, mostly as unconsolidated sediments, in shallow water. The gradual elevation of the land later exposed these sediments to the processes of weathering and the present-day soils have resulted. In some recent times additional material was carried down by Flint River and deposited as alluvium on its bottom, and as the river cut deeper channels this was left as high terraces adjacent to the present flood plain.

The surface soils of Mitchell County are predominantly sandy and are gray, grayish brown, and brown in color. The subsoils are more variable in texture and color, ranging from a light-gray sand to a very heavy, plastic red clay. The soils are grouped into series on the basis of color, origin, topography, and structural characteristics. The series are divided into types on the basis of texture of the surface soil.

The dominant soil series in the county is the Norfolk, characterized by grayish-brown to brown surface soils and a yellow subsoil of

[3] The soils of Mitchell County in general join with the same soils as mapped in Dougherty and Colquitt Counties. However, there are a few places along the county lines where the soils are not mapped the same. This is due to a better understanding of these soils and more detailed mapping. For similar reasons the soils of Mitchell County do not join those of Grady and Thomas Counties, which were surveyed in 1908.

sandy or friable sandy clay texture. Drainage is generally well established. The Norfolk soils are derived by weathering from unconsolidated Coastal Plain sediments. Closely related to the Norfolk soils are the Ruston soils, characterized by grayish-brown to brown surface material and a light-red or dull-red subsoil of friable sandy clay. The Orangeburg is another series similar in origin and general drainage conditions to the Norfolk and Ruston, the essential difference consisting in the deeper red color of the Orangeburg subsoil. The Tifton sandy loam represents a series of well-drained upland soils differing essentially from the Norfolk in the large number of small rounded iron concretions carried in the surface soil and subsoil. The Susquehanna series includes gray sandy surface soils underlain by heavy plastic clay, red to mottled drab, red, and yellow in color, with rolling topography and well-established surface drainage.

The poorly drained upland soils of the county are classified with the Dunbar, Plummer, Portsmouth, and Grady series. The Dunbar, represented by the fine sandy loam type, has grayish-brown surface soils underlain by a yellow, friable fine sandy clay, grading into a mottled red and yellow heavy sandy clay. The Plummer and Portsmouth series are similar to the Dunbar, the Plummer having gray and the Portsmouth having black surface material, the subsoil of both series being a gray sandy clay. The Grady soils occupy true sink holes and sloughs and have gray surface material with a heavy plastic gray to mottled clay subsoil.

The terrace soils represent three series—the Kalmia, Cahaba, and Leaf, in color respectively similar to the Norfolk, Ruston, and Grady series of the upland. The subsoils of the terrace sandy loams are generally much heavier than those of the corresponding upland types. The soils of the Kalmia and Cahaba series are generally well drained, those of the Leaf series are poorly drained.

Overflow lands of the stream bottoms consisting of miscellaneous mixed soil material are mapped as Swamp.

There are three distinct upland soil regions in Mitchell County, the boundaries of which have a northeast-southwest trend, approximately parallel to the general course of Flint River. Adjacent to the terraces of the river is a region of sandy soils where the Norfolk sand is the dominant type. Associated with it are large areas of the deep phases of Norfolk sandy loam and Ruston sandy loam. Sinks and depressions in this region are occupied by Grady soils and Plummer sand. This region of sandy soils is 10 miles wide at the southern county line and gradually narrows toward the north to a point just southwest of Baconton. A central soil belt 6 to 8 miles wide extends entirely through the county in a northeast-southwest direction. Here the Norfolk and Ruston sandy loams and fine

sandy loams are predominant, with considerable areas of Dunbar fine sandy loam. This region includes sinks or depressions occupied by Grady soils. The southeastern part of the county is occupied by a region of Tifton sandy loam with well-defined drainage ways, the slopes of which are wet with seepage water and occupied by the Plummer sandy loam.

Between the central region of Norfolk and Ruston soils and the southeastern region of Tifton sandy loam is a belt of broken topography marked by areas of Susquehanna sandy loam and fine sandy loam.

The following table gives the names and actual and relative extent of the several soil types developed in Mitchell County:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Norfolk sandy loam	51,264	26.3	Orangeburg sandy loam	5,312	1.6
Deep phase	33,856		Swamp	4,480	1.4
Norfolk sand	48,640	15.0	Cahaba fine sandy loam	4,416	1.4
Tifton sandy loam	48,576	15.0	Susquehanna sandy loam	4,288	1.3
Ruston sandy loam	17,280	9.7	Plummer sand	3,776	1.2
Deep phase	10,816		Ruston fine sandy loam	3,136	1.0
Pebbly phase	3,712		Cahaba sandy loam	3,072	1.0
Plummer sandy loam	17,600	5.4	Kalmia fine sandy loam	2,176	.7
Norfolk fine sandy loam	13,696	5.1	Portsmouth sandy loam	1,792	.6
Deep phase	2,880		Kalmia fine sand	1,664	.5
Dunbar fine sandy loam	13,824	4.3	Kalmia sand	1,408	.4
Grady sandy loam	12,672	3.9	Leaf clay loam	1,088	.3
Grady clay loam	6,976	2.2			
Susquehanna fine sandy loam	5,440	1.7	Total	323,840	

NORFOLK SAND.

The surface soil of the typical Norfolk sand, as mapped in this county, consists of a brownish-gray to grayish-brown loamy sand which contains some coarse sand and some rounded gravel. The average depth of the soil is about 6 or 7 inches. In the lower part it is characteristically yellower than at the surface. The subsoil is a yellow sand containing enough material of the finer grades to give it a slightly loamy character.

In the southeastern and eastern parts of the county the type varies considerably from the general and typical development. Here the surface soil is a light-gray to yellowish-gray, rather loose and incoherent sand, while the subsoil is a pale-yellow, loose, incoherent sand which may extend to depths well below 3 feet. In local areas the lower part of the subsoil is more loamy and grades into a sandy clay at

about 3 feet, these areas in reality being small developments of the Norfolk loamy sand. Throughout the extent of this type there are small areas in which the surface material is finer than typical. These areas represent the Norfolk fine sand, but they are too small to be shown on the map.

The largest and most typical area of the Norfolk sand in this county lies in the western and southwestern parts. It begins at the southern county line as a broad belt about 6 miles wide, and extends northeastward to about 5 miles northwest of Camilla, where it gradually pinches out. This development is broken only by small areas of the deep phase of the Norfolk sandy loam, small spots of the deep phase of the Ruston sandy loam, and a few spots of Plummer sand and of Grady soils. In the eastern and southeastern parts of the county the type is only incidental, representing areas where the sands have been deposited or have accumulated in greater thickness than is common in this section. The areas are small and scattered.

In its main development the Norfolk sand has a level to undulating topography. The surface is broken only by sinks or depressions, and is devoid of ridges and slopes, such as are normally found in a region drained by surface streams. East of Pelham and Camilla the areas occur on the crests of ridges, but more generally along the lower slopes and around the heads of streams. The type is well drained. The drainage of the main body is effected through a series of sinks and subterranean streams. In places where the soil is more than ordinarily open and loose and the surface is uneven, the drainage is likely to be excessive. The best crops on this type are usually obtained in seasons of frequent rains and showers during the growing season.

The Norfolk sand supports a characteristic forest vegetation, consisting of scattering longleaf pine, post oak, black oak, and blackjack oak, with some water oak and live oak around depressions. The hardwood growth is stunted and gnarled. The herbaceous vegetation consists chiefly of scattered clumps of wire grass and some broom sedge. About 60 per cent of the type is cleared, but much of the cleared area is lying idle. The region in which the main development of the soil is found is the oldest settled section of the county, and this was one of the first types of soil to be cleared and farmed.

All the common crops of the county are produced on the Norfolk sand with varying degrees of success. The yields depend upon the management of the individual farms. Cotton averages considerably less than one-half bale per acre, the yield ranging from one-fifth to more than one-half bale, the latter where it is liberally fertilized and well cared for. Corn averages about 10 bushels per acre. Peanuts

average about 20 bushels per acre, oats about 10 bushels, and cowpea hay one-half ton per acre.

Land of this type ranges in price from $20 to $50 an acre, depending upon location and improvements.

The Norfolk sand is easily tilled. It has an open and loose structure, which favors the production of early crops. Where market and shipping facilities warrant, the soil can be used to advantage in the production of vegetable crops that can be grown and harvested before the hot summer season and from which the returns would be sufficient to warrant the use of large quantities of fertilizer. The soil is typically lacking in organic matter, which should be supplied liberally by turning under green-manure crops. Among the crops which could be used to advantage for this purpose are rye, crimson clover, soy beans, velvet beans, and cowpeas. The production of peanuts and sweet potatoes on a commercial scale will be the best solution of the utilization of this type, especially in view of the destructiveness of the boll weevil.

NORFOLK SANDY LOAM.

The Norfolk sandy loam has a surface soil consisting of a gray to brownish-gray loamy sand or light sandy loam which extends to an average depth of 7 inches and usually becomes yellowish gray in the lower part. The typical subsoil begins as a pale-yellow to light-brown loamy sand and gradually becomes heavier with increasing depth, passing through a light sandy loam and into heavy, friable, bright-yellow sandy clay at a depth of 12 to 20 inches. The sandy clay continues to a depth of 3 feet or more.

There are a number of variations in this type. In places the subsoil at a depth of 34 to 36 inches becomes tougher than typical, approaching the characteristics of the Susquehanna subsoil. The heaviness of the lower part of the subsoil, as found in the central and northeastern parts of the county, is principally due to the close approach of a substratum of mottled yellow, red, and gray clay, a characteristic of the formation in which it is found. Where the heavy sandy clay is found below 24 inches, the soil is classed as a deep phase of the type. There are spots of typical Norfolk fine sandy loam and coarse sandy loam which are so irregular in occurrence and so intricately associated with the sandy loam that separation is impracticable. Small narrow areas of the Ruston sandy loam, too small to separate, are also included. These commonly occur on the brows of slopes and in some places on lower slopes. Here and there a few pebbles occur in the soil material, but not in such quantities as are found in the Tifton sandy loam.

The Norfolk sandy loam is one of the most extensive soils of the county. It is found in all parts of the county, but the chief de-

velopment is in the northeastern corner and in the vicinity of Camilla.

This soil is derived from unconsolidated marine deposits which vary considerably in different parts of the county. Throughout the western and central parts the material is deposited over beds of fossiliferous, cherty limestone. In the eastern section the later deposits of sand have been laid down over an older eroded deposit of clay. The line of contact between the two formations can be seen plainly in many places, especially as expressed in a difference of topographic forms. In the western and central parts of the county, or within the region of the sink depressions, the deposits are considerably finer in texture and produce a soil generally more silty than that found in the eastern part of the county.

The Norfolk sandy loam occurs in two regions differing from each other in topography—the lime-sink region and the region occupied by the Altamaha formation. The surface features of the latter consist of rounded ridges, and gentle slopes that are cut by small heads of streams, so that by far the greater proportion is rolling, a very small proportion being smooth, level, or flat. In the region of sinks in the central and western parts of the county the surface is level to flat, with only sufficient relief for good surface drainage. The topography of the type as a whole is favorable to the use of improved machinery. The drainage is well established, generally through the surface relief.

The Norfolk sandy loam originally supported a heavy forest, consisting principally of longleaf pine, red oak, black oak, and post oak, with some hickory. About 75 per cent of the type has been cleared. The soil is utilized in the production of the staple crops of the county. Cotton is the principal crop. The yields range from less than one-half bale to more than 1 bale per acre, depending largely upon the management. The average yield per acre is about one-half bale. Corn is the second crop, with yields that have a wide range, from that of the tenant farmer, ordinarily about 12 bushels per acre, to that of pet acres on which as much as 60 to 70 bushels are produced. The average for the county is about 15 bushels per acre. The average yield of oats is also about 15 bushels. Among crops which produce good returns are rye, cowpeas, and velvet beans. Sugar cane, peanuts, and sweet potatoes are promising crops.

The price of land ranges from $30 to about $125 an acre, depending upon the location and improvements.

The Norfolk sandy loam is one of the most desirable soils of the county for general farming and special crops. The soil can be handled with light implements. It is open and loose and readily absorbs moisture, while the heavier subsoil is retentive, maintaining a good supply for the growing crops. One of the special needs

of this type is organic matter, which can be supplied by turning under green-manure crops, such as crimson clover, cowpeas, or velvet beans. The type can be used for the production of a large number of special crops, among which are early Irish potatoes, sweet potatoes, light-leaf plug wrapper or cigarette tobacco, crops such as peas, beans, lettuce, cucumbers, cantaloupes, and watermelons, fruit crops such as peaches, and also pecans. In other counties of the State the type has produced in an experimental way good returns from alfalfa, the land having been heavily limed before seeding.

Norfolk sandy loam, deep phase.—The deep phase of the Norfolk sandy loam has been mapped in this county to include those areas in which the heavier subsoil is reached at depths considerably lower than the average of the type. The surface soil is a gray or light-gray sand to a depth of 2 or 3 inches, below which it is a yellowish-gray sand, the surface soil as a whole being considerably lighter in color than typical. The upper part of the subsoil consists of a pale-yellow sand to loamy sand which below 15 or 18 inches becomes slightly heavier and grades into a friable, yellow sandy clay at a depth below 24 inches. In some places this heavy material is not reached until at a depth of about 34 to 36 inches, and the phase grades to the Norfolk loamy sand.

This phase is developed chiefly in the western part of the county in association with the broad belt of Norfolk sand. One of the largest and most typical areas is near Hopeful Church. Other small areas are found in the central part of the county, but they are usually small. In the eastern part of the region of rolling lands there is a scattering of small areas, which generally occur on the lower slopes or around the heads of streams and in a few places occupy the crests of ridges. The type everywhere has a smooth or gently rolling topography which insures good drainage.

The largest part of this phase is cleared of the natural forest growth and utilized in the production of the common crops of the county. The yields of the various crops in many cases approach those of the typical soil, but on the average are slightly lower. The phase is adapted to about the same crops and should be improved in the same manner as the typical soil. In particular, it needs organic matter, even more than does the typical soil, as the areas of the phase can generally be distinguished from the typical by a distinctly lighter surface color. In other parts of the State this phase is considered desirable for the production of tobacco, good quality compensating for relatively low yields. The phase would be desirable soil for the production of special crops for early market where market and shipping facilities favor their production.

NORFOLK FINE SANDY LOAM.

The Norfolk fine sandy loam has a surface soil of gray to brownish-gray, smooth, mellow loamy fine sand, containing a considerable proportion of very fine sand, which produces a desirable smooth and velvety tilth. The soil has an average depth of about 8 inches. In places it becomes more yellowish at about 3 to 6 inches. The subsoil begins as a pale-yellow loamy fine sand to fine sandy loam, which at 15 to 18 inches passes into a bright-yellow, friable fine sandy clay. The heavier section of the subsoil varies considerably in depth, especially where a rolling topography is developed. Areas in which it lies below 24 inches are mapped as a deep phase of the type. In areas adjoining the Susquehanna soils the subsoil is heavier, somewhat tough, and more sticky than typical. In these places mottlings of yellow or red may occur in the lowest part of the profile. In a few places there is a scattering of pebbles, but these are not abundant as in the Tifton sandy loam. There are also included some spots of the Ruston fine sandy loam, too small to map, in which the subsoil is reddish yellow.

The Norfolk fine sandy loam is developed in large areas in the south-central part of the county, the largest lying southwest, west, and northwest of Pelham. In the eastern section of the county it is developed in very small areas associated with the Tifton sandy loam.

The most extensive development of this type occurs in a region of undulating to gently rolling topography. Practically all the type within this region can be farmed with improved machinery, including tractors. A number of areas have a very smooth, level, or flat surface. The main areas of this flat variation are in the north-central part of the county, bordering the Dougherty County line, and north of Greenough along Raccoon Creek and its tributaries. The drainage of the type as a whole is well established. The drainage water is carried to subterranean channels in the largest areas and to small stream channels in the eastern and northern sections of the county.

The forest growth is principally longleaf pine, with a scattering of hardwoods. About 40 per cent of the type is cleared and cultivated, the common crops of the county being produced with very good success. Cotton averages less than one-half bale under boll-weevil conditions. Corn averages about 15 bushels and oats from 12 to 15 bushels per acre. The yield of peanuts ranges from 20 to 70 bushels per acre, the average being about 30 bushels. Sweet potatoes yield from 80 to 200 bushels or more per acre, the average being about 100 bushels. Cowpeas average three-fourths ton of hay per acre. Velvet beans yield about 30 bushels per acre, but they are not always picked. Sugar cane produces large yields of a light-colored sirup of good flavor and high quality.

The price of land of this type ranges from $30 to $75 an acre, depending upon location and improvements.

The Norfolk fine sandy loam in general is a very desirable soil. It is especially valuable for the production of all the common crops of this part of the State, as well as for a large number of special crops, such as truck crops, fruit, or pecans. One of the chief needs of this type is organic matter, which can be supplied by turning under green-manure crops, preferably legumes, such as crimson clover, cowpeas, or velvet beans.

Norfolk fine sandy loam, deep phase.—The deep phase of the Norfolk fine sandy loam, to a depth of 3 to 5 inches, is a light grayish brown loamy fine sand. This grades into a pale-yellow loamy fine sand which extends to a depth of 24 to 30 inches, where it grades into a bright-yellow friable fine sandy clay. The most extensive areas of this phase are in the south-central part of the county, 4 to 6 miles south and southeast of Camilla. The topography is level to gently undulating, and the drainage is generally well established. The deep phase is commonly farmed in connection with the typical fine sandy loam and has a similar agricultural value, though it is not quite so highly regarded for general farm crops. It is well adapted to peanuts and sweet potatoes.

RUSTON SANDY LOAM.

The surface soil of the Ruston sandy loam, as found in virgin areas, consists of about 4 inches of a brown, friable loamy sand, but in cultivated areas it has a more grayish brown color, becoming yellowish gray in the lower part. The subsoil, to a depth of 10 or 12 inches, is a yellowish-red or reddish-yellow, friable, loose loamy sand which becomes heavier with depth and passes into a friable sandy loam of about the same color. Below this there is a heavier subsoil layer which typically consists of a friable dull-red or yellowish-red sandy clay, extending to a depth of 3 feet or more.

Throughout the areas of this type are found small spots in which the texture of the material is finer than typical. The subsoil also varies, being in places yellower, like the Norfolk sandy loam, or redder, like the Orangeburg sandy loam. These variations are a natural feature of this soil, as the color characteristics of the type are intermediate between those of the Norfolk and Orangeburg soils.

The Ruston sandy loam is derived from beds of unconsolidated marine materials occurring in regions underlain by the Vicksburg-Jackson limestone and the Altamaha formations. The most extensive areas lie in the region of the Vicksburg-Jackson formation. The largest of these lie in the vicinity of Flint, 5 miles northeast of Baconton, near Greenough, and in a number of places along the

north side of Raccoon Creek. Many smaller areas are scattered throughout this section of the county. The areas mapped in the region of the Altamaha formation are generally small, being developed on small knolls and slopes scattered throughout the entire region, occurring in close association with the more extensive Tifton sandy loam.

The type has a gently undulating topography with sufficient surface relief to afford good drainage. Improved farm machinery can be used to advantage over the entire area of this soil. There is little or no danger of erosion.

The Ruston sandy loam was originally forested with a heavy growth of longleaf pine in which were some oak and hickory. Practically all the timber has been removed. Between 60 and 70 per cent of the type is now cleared and utilized in the production of the common crops of the county. The yields of the various crops are about the same as on the Norfolk sandy loam.

Land of the Ruston sandy loam is held for $15 to $60 an acre, depending upon the location and improvements.

The Ruston sandy loam is a desirable type, as it is generally productive and responds readily to good cultural methods. These should include a system of crop rotation in which a legume is grown either as a companion crop with a nonleguminous crop or following such crop. Besides such crops as corn, oats, cowpeas, peanuts, sweet potatoes, and velvet beans, the type could be used in growing truck crops for canning purposes or for shipment, should market and shipping facilities warrant their production.

Ruston sandy loam, deep phase.—The surface soil of the deep phase of the Ruston sandy loam is a brown loamy sand, 3 to 5 inches deep. This is underlain by a light reddish brown loamy sand which extends to a depth of 20 to 30 inches. The lower subsoil is a dull-red to yellowish-red friable sandy clay. Variations within the phase as mapped are chiefly differences in depth to the sandy clay subsoil. Locally the loamy sand may continue throughout the 3-foot section, but such areas are small and of minor importance. Small areas in the eastern part of the county are marked by a heavier clay subsoil than is typical of the phase, resembling that of Susquehanna sandy loam.

The deep phase of the Ruston sandy loam occupies relatively large areas in the western part of the county in a belt trending northeast-southwest approximately parallel to Flint River. It is associated here with the Norfolk sand and the Norfolk sandy loam, deep phase. Smaller areas occur in the eastern part of the county near the eastern county line.

The topography of this phase is level to undulating, broken in places by small sinks or depressions occupied by Grady sandy loam.

Drainage is practically all underground, the pervious nature of the soil, subsoil, and substratum favoring such a system. There are no areas of poor natural drainage within the phase.

Areas of the deep phase of the Ruston sandy loam were among the first lands in Mitchell County to be brought under cultivation, although part of the phase is still in forest. The original tree growth consists of longleaf yellow pine and various species of oak, including black oak and willow oak. The pine attains a fair size, but the oaks are relatively small. This phase is used for the production of the general farm crops of the region, cotton, peanuts, corn, velvet beans, cowpeas, and other forage crops being important. Some small grain, chiefly oats, is produced. The yields, fertilizers used, and farm practices are similar to those obtaining on adjacent areas of the Norfolk sandy loam, deep phase. Land values range from $30 to $75 an acre, depending upon location and improvements.

Ruston sandy loam, pebbly phase.—To a depth of 4 to 6 inches the pebbly phase of the Ruston sandy loam is a light-brown, medium to fine sandy loam containing a high percentage of small rounded iron concretions, locally called "pebbles." This surface material is underlain by a bright-yellow to yellowish-red loamy sand which grades into light-red sandy clay at 12 to 18 inches below the surface. Both subsurface and subsoil carry the concretions characteristic of the phase. On the steeper slopes, where washing has been active, the surface and subsurface material in many places has been largely carried away, leaving the reddish sandy clay subsoil exposed.

The pebbly phase of the Ruston sandy loam occurs on slopes in association with the Tifton sandy loam, to which it is similar, representing the same material in a more advanced stage of oxidation. This phase is indicated on the map by gravel symbols. The topography is rolling to sloping, except in a few places. An area about 2½ miles east of Pelham is nearly level. Drainage is everywhere naturally well established.

The Ruston sandy loam, pebbly phase, is not an important agricultural soil of the county because of its small total extent. A large proportion of it is under cultivation. Where the topography is favorable it ranks with the Tifton sandy loam as one of the best soils of the county. It is farmed usually in connection with the Tifton sandy loam, the crops produced and methods and fertilizers used being practically the same as on the Tifton soil. In general, owing to its topography, it is more subject to washing than the Tifton sandy loam. Many of the areas have been terraced, and the need for further improvement and maintenance of terraces is apparent.

RUSTON FINE SANDY LOAM.

The surface soil of the Ruston fine sandy loam is a brownish-gray loamy fine sand. It is underlain at 3 to 5 inches by a bright-yellow to light-red fine sandy loam, which grades into a light-red friable sandy clay at 10 to 15 inches.

This soil occurs in small areas in the south-central and eastern parts of the county, where in most cases it is associated with the Norfolk fine sandy loam. It generally occupies rolling or sloping areas where drainage and other conditions have been favorable to weathering.

It is regarded as a good soil for the general crops of the region, and where the topography is favorable it has a high agricultural value. It is farmed in connection with adjoining areas of Norfolk soils, and yields, methods of management, and land prices are similar to those prevailing on the Norfolk types.

ORANGEBURG SANDY LOAM.

The surface soil of the Orangeburg sandy loam is a brown loamy sand, 3 to 6 inches deep. This is underlain by a reddish-yellow to reddish-brown sandy loam which grades at about 12 inches into a deep-red friable sandy clay, extending to a depth of more than 3 feet. Under cultivation, especially where plowed deeply, the subsurface material becomes mixed with the surface soil, imparting a reddish tinge to newly plowed fields. On steeper slopes surrounding the sinks in the areas of this type the surface material is heavier in texture, redder in color than typical, and carries small iron concretions. Locally there is more or less rounded chert scattered on the surface and through the subsoil, the fragments ranging in size up to 2 or 3 feet in diameter. Places in which these are numerous and prominent are indicated on the soil map by stone symbols.

The largest area of Orangeburg sandy loam in the county borders the terraces of Flint River northeast of Baconton. Other smaller areas are scattered in similar positions with relation to the terraces as far south as the southern boundary of the county. The topography is level to gently rolling, and both surface and internal drainage are good.

The total area of this type in the county is not large. Possibly 60 per cent of it is under cultivation. The remainder is mostly in young longleaf yellow pine, the mature timber having been cut.

A large proportion of the area of Orangeburg sandy loam is planted to pecans, to which the soil is well adapted. Some of the best groves in the county are found on this type in the neighborhood of Dewitt. Only a relatively small acreage of Orangeburg sandy loam is used

for the production of general farm crops. It is regarded as a strong soil for the production of cotton, corn, peanuts, velvet beans, cowpeas, and soy beans. It seems especially well adapted to the legumes. It is noted that lespedeza, reseeding itself, makes good pasturage in the more open forest areas of the type.

The cultural methods and the fertilizers used are similar to those on the Norfolk sandy loam.

Land values vary greatly within this type, being dependent upon location and improvements. Small isolated areas included with other soil types range in value from $30 to $50 an acre. Lands in bearing pecan groves may be held at $600 to $800 or more an acre.

TIFTON SANDY LOAM.

The surface soil of the Tifton sandy loam is prevailingly a light brownish gray to grayish-brown loamy sand which becomes yellowish gray as the soil grades into the subsoil. The average depth of the soil is about 8 inches. The subsoil usually begins as a pale-yellow loamy sand which gradually becomes heavier with depth and passes into a yellow friable sandy clay at depths of 12 to 30 inches, the average depth being about 20 inches. It is not uncommon to find in the lower part of the subsoil slight mottlings of red. A distinguishing feature of the Tifton sandy loam is the presence of small ferruginous pebbles or ironstone concretions, which are scattered over the surface and disseminated through the soil and subsoil, forming 10 to 30 per cent of the mass. These pebbles vary from a quarter to a half inch in diameter and are of a brownish-red color. The combination of the pebbles with the sandy clay generally produces a very hard subsoil, and therefore the land is sometimes called "hard pebbly land." It is also known as red pebbly land.

Throughout the extensive areas of this type there are included areas that depart somewhat from the typical. Where the subsoil is encountered at depths below 24 inches, the deepest variation of the type is developed, and usually in these places the surface soil is grayer in color and the upper part of the subsoil lighter in texture and color than in the typical development. This condition prevails in a number of places, chiefly in the eastern part of the county in the vicinity of Pebble City. In other parts of the area the surface material is considerably finer than typical and closely approaches a fine sandy loam. The soil in this case is smoother and more velvety than typical. This variation is developed in the eastern part of the county, especially near the Colquitt County line. The material in areas of the Tifton sandy loam mapped within the plains region, which is characterized by many sink depressions, is somewhat heavier and browner, and the pebbles are usually smaller

and darker colored than in the type as found in its broad developments in the region occupied by deposits of the Altamaha formation.

The Tifton sandy loam in Mitchell County is extensive in the southeastern part of the county, where it occurs in broad, continuous areas and forms the greater proportion of the soils of the section. It is developed in large areas in the vicinities of Pelham, Cotton, Hinsonton, and Sale City. In the region of the lime sinks the areas are small. Here they lie on the slopes and brows of hills and on some small knolls.

The Tifton sandy loam is typically developed on gently rolling ridges which have long, gentle slopes to the stream courses. It is usually confined to the crests or higher parts of these ridges. As the streams are approached the type usually gives way to the Plummer sandy loam. The type as a whole has a most desirable surface configuration, with sufficient relief for drainage and yet smooth enough to permit the use of all improved farm implements, including tractors. In some places the internal drainage is not good on account of the hard subsoil, which retards the downward movement of water and water-logs the soil in very wet seasons. The soil also forms a slight surface crust when drying from this saturated condition, though such crust can usually be broken down more or less easily.

The Tifton sandy loam supported an original forest growth of magnificent longleaf pine, with a scattering of hardwoods. This type was one of the last soils to be taken up by the settlers of the county. However, at the present time over 90 per cent of it is cleared and under cultivation, being used in the production of the various crops common to this section of the country. It is now looked upon as one of the most desirable soils in the county and supports a large number of prosperous farmers. The yields of the various crops are, in general, somewhat higher than those on the Norfolk sandy loam of this county. One reason for this may be that it is a newer soil, having been taken into cultivation at a later date.

Most of this land is highly improved on account of its desirable qualities, and therefore brings relatively high prices. It is held for $75 to $150 or more an acre, depending upon location and improvements.

The Tifton sandy loam and Norfolk sandy loam are suitable for about the same crops and the productiveness of each can be maintained by the same methods.

SUSQUEHANNA SANDY LOAM.

The Susquehanna sandy loam, as mapped in this county, is quite variable in its profile. In the greater part of the type, however, the surface soil consists of a gray to light brownish gray sand to loamy

sand which becomes more yellowish in the lower part. The average depth is about 7 inches. The typical subsoil is developed in two sections. The upper section consists of a pale-yellow or light-brown sand to loamy sand which usually grades heavier with depth and passes into a rather yellow tough sandy clay. This is underlain at about 20 to 22 inches by the lower section, which consists of heavy, stiff, sticky, plastic, and impervious clay. The color of this clay is usually a dull red with fine mottlings of various shades of yellow, gray, and drab. In the lower situations the color carries a larger percentage of grays and yellows, and in places it is mottled with bright red. This heavy section of the subsoil is a distinguishing feature of the type, regardless of the various combinations of color.

Among some of the variations commonly found throughout areas of this type are differences in the texture of the surface material. In some places, especially on slopes and knolls, the material is decidedly coarse, but areas of this kind are small. In other places the surface soil is distinctly finer than the typical, but was included with the type on account of the close association. The upper section of the subsoil may vary from 20 inches in thickness to as thin as 1 inch, or it may be entirely lacking, so that the surface material rests immediately on the heavy section of the subsoil. In some spots the heavy subsoil is exposed, producing gall spots, which are generally undesirable on account of the close proximity of the clay. Throughout the general areas of the type there are commonly found a large number of small spots of the Norfolk sandy loam, Norfolk sand, and Plummer sandy loam, which are so intricately associated with the general areas and so small in extent that they could not be separated on a map of the scale used.

The type is developed to a large extent in the northeastern part of the county and also in scattered areas in a belt extending from this section southwestward to Pelham. The largest areas are in the vicinity of Greenough and north of Sale City. It appears to be developed along the line where the broad plains of the lime-sink region break to the rolling region of the Altamaha formation.

The Susquehanna sandy loam is derived from beds of heavy clays of marine origin, which underlie a large part of the county, but are not exposed for the formation of soils except in the areas where this type occurs. In many places the material is found as a substratum underlying the Norfolk types, and it is commonly encountered in digging wells.

This type has a very distinctive topography. It consists of a sharply undulating surface throughout which there are irregular knolls, ridges, and corresponding low places which give to the whole extent of the type an irregular and choppy appearance. Where the

type occurs on slopes the surface is especially uneven on account of a large number of seepage ways which occur in these positions. The topography generally favors drainage except in the small, narrow, depressed areas. The drainage is imperfect, however, on account of the impervious nature of the subsoil which inhibits the internal movement of moisture. The presence of many seepage areas along the slopes and of locally developed poorly drained spots throughout the whole extent of this soil is due to the impervious nature of the lower subsoil.

This type originally supported a good growth of longleaf pine and a scattering of oaks, with some gums in the depressed areas or around the poorly drained spots. Most of the timber has been removed. About 20 per cent of the type is cleared and cultivated. This type is not as extensively used as the other types because of the character of the soil and its choppy or uneven surface. Under ordinary methods of cultivation cotton produces about three-eighths bale, corn about 10 to 12 bushels, and oats about 10 to 12 bushels per acre. Velvet beans produce good yields. Some peanuts are produced, but the yields are not determined, as they are hogged down.

The Susquehanna sandy loam is difficult to handle properly. Even though the surface is light, it often bakes and forms a crust when dry, and when wet it is boggy on account of the moisture which is held up by the impervious subsoil. It is sometimes spoken of as cold, clammy land. Fair yields of crops can be obtained from it when handled with care. It is said that crops are slow to start in wet years, and in some seasons they drown out. Moderately light showers, well distributed, are the most favorable for crops on this type of soil.

The price of this land will average $10 to $15 an acre throughout the county.

SUSQUEHANNA FINE SANDY LOAM.

The surface soil of the Susquehanna fine sandy loam is a smooth, velvety, grayish-brown to dark-gray loamy fine sand, 5 to 8 inches deep. The subsoil occurs in two sections. The upper is typically a light-gray to yellow loamy fine sand to fine sandy loam, grading into a fine sandy clay. This section may vary from an inch or two in thickness to as much as 18 inches, or in places it may be lacking. The lower section consists of a very heavy, plastic, sticky, impervious clay, mottled red, yellow, and gray.

The variations included with this type consist of small spots of the sandy loam too small to separate and a few spots of the Norfolk sandy loam. The great variations within the type itself are due to the irregularity of the upper section of the subsoil. Where this section is

well developed, the surface soils are gray, of a pepper-and-salt character, while where it is lacking, and the heavy subsoil lies near the surface, the soil is more bluish gray or drab, on account of the moisture conditions.

The Susquehanna fine sandy loam is derived from beds of clay like those giving rise to the sandy loam of this series. Both types occur within the same general region and differ essentially only in the texture of the surface soil. The topography, drainage, and general agricultural development of these types are about the same.

PLUMMER SAND.

The surface soil of the Plummer sand is a dark-gray quartz sand, 12 to 18 inches deep. This is underlain by a light-gray sand to a depth of 36 inches or more. Both soil and subsoil are composed of quartz sand grains, varying in size from fine to coarse, mixed with finely divided organic matter.

The Plummer sand occurs in relatively small areas in the western and southwestern parts of Mitchell County. It is generally associated with the Norfolk sand. The largest continuous area of the type is 5 miles west and southwest of Camilla.

The Plummer sand occupies depressions or the slopes of depressions, the centers of which are occupied by the Grady clay loam or sandy loam. The topography is level to gently sloping. The topographic location of most of the type in sinks or depressions without visible drainage outlets would indicate poor drainage. But, owing to the porous nature of the soil and subsoil, and the presence of underground channels, the drainage is in most cases excessive. The type is not farmed, except in some very small areas occuring in fields of the Norfolk sand. The tree growth consists chiefly of longleaf pine, live oak, and water oak.

PLUMMER SANDY LOAM.

In the Plummer sandy loam the surface soil is a gray or drab-gray to bluish-gray sand to loamy sand with an average depth of about 8 inches. The subsoil usually begins as a bluish-gray loamy sand somewhat lighter than the surface, and is underlain at an average depth of 18 inches by a bluish-gray heavy sandy clay which is mottled with shades of yellow, gray, and brown.

Throughout the areas of this type there are narrow strips of Swamp along the stream courses. Small patches of Plummer sand and a few small areas of Portsmouth sandy loam in which the surface soil is black instead of gray, also are scattered through the type. Where the Plummer sandy loam occurs in the region of the Susquehanna soils, the subsoil usually is more plastic than typical. There are also included with this type small areas in which the

surface soil consists of a particularly smooth and mellow fine sandy loam. Such areas represent the Plummer fine sandy loam, but were included on account of their small extent and close association.

The Plummer sandy loam is principally mapped in the eastern part of the county, or the region which is drained by a complicated network of streams. The type occurs along the streams of this region, extending well up around the heads of even the smallest branches, especially on the slopes surrounding the sources of these small drainage ways. This type comprises practically all of the poorly drained lands of this section of the county except the Swamp. Its poor drainage is due to seepage caused by underlying beds of heavy clays as well as to its low position. A few small areas of the type occur in shallow depressions throughout the central part of the county. Such a position is exceptional.

The Plummer sandy loam in its present poorly drained condition can not be used to advantage for cultivated crops, but has some value for pasture and forestry. A few narrow strips included in fields with better drained soils comprise practically all the land of this type that is under cultivation. This soil supports a growth of loblolly pine, bay, and gum, and an undergrowth of gallberry and other water-loving plants, among them the pitcher plant, or trumpet flower. Crawfish chimneys are a distinctly characteristic feature.

Land of this type generally has a low value on account of the poor drainage. It is usually sold in conjunction with the surrounding better drained lands.

PORTSMOUTH SANDY LOAM.

The surface soil of the Portsmouth sandy loam consists of a black loamy sand, rich in organic matter, underlain at a depth of about 10 inches by a brownish or dingy-gray sand. The subsoil, beginning at a depth of 15 inches, consists of a gray, drab, or mottled yellow and gray sandy clay. Variations in the surface soil consist chiefly of differences in the content of organic matter. In some areas occupying deeper depressions the surface material is a black muck containing but a small percentage of sand.

The Portsmouth sandy loam occupies small areas distributed through the eastern part of the county. It occurs in flat, poorly drained depressions in the uplands. The type is of little agricultural importance at present, as the poor natural drainage prevents cultivation. The native vegetation consists of cypress, loblolly pine, bay, gallberry, smilax vines, and many small shrubs and herbs. When drained and reclaimed it will grow good corn and oats or make excellent pasture.

GRADY SANDY LOAM.

The surface soil of the Grady sandy loam is a drab-gray, bluish-gray, or neutral-gray friable sandy loam which extends to an average depth of 8 inches. The subsoil begins as a gray to bluish-gray, friable sandy loam, which quickly passes into a heavy sandy clay with an average depth of 12 to 15 inches. This grades into a heavy, sticky, impervious clay, which varies in color from light gray to a dark slate gray and is mottled with shades of brown, yellow, and red.

This type varies considerably from one area to another and in many cases within the same small body only a few acres in extent. The surface soil may be lighter gray than as described above. In some of the more poorly drained situations it may be considerably darker, or may even consist in the upper part of a thin layer of dark mucky material. The subsoil is also variable. In some places where it is more sandy it approaches the subsoil of the Plummer sandy loam. Some of the areas have a fine sandy loam surface soil. These different areas were not separated as distinct soils on account of their small extent and intricate association with the typical development, and also because of the fact that during the course of the survey many of the areas were covered with water, so that it would have been impracticable to carry out a close separation of all of these differences.

The Grady sandy loam is developed throughout that part of the central section of the county characterized by the presence of the lime sinks and is one of the soil types occurring in these sinks. The heavy nature of the subsoil is thought to have resulted from the weathering of the underlying limestone formations. The depressions are said to be due to the solution of underlying limestones, which has caused the dropping of the surface. The majority of the areas are circular or oval, but there are many which narrow and broaden in a sinuous course, and which serve as slight drainage ways. The floors of these areas are generally 2 to 4 feet below the level of the surrounding soils. The surface is generally flat and in places more or less inclined toward the center, where there may be a small body of water, even during the driest periods. The areas of this soil, low and poorly drained, serve to a large extent as basins for the accumulation of the run-off of the surrounding soils. They are continuously wet except in the driest seasons, and this lack of drainage precludes their use for agriculture.

Some areas of the type are covered with a growth of cypress, slash pine, gum, oak, and mayhaw. Around the edges of ponds are usually found some conspicuously large water oaks. In those areas that are more or less continuous and serve to some extent as drainage ways there are also found maple, elm, and other water-loving trees and

plants. This type supports more gallberry, Christmas oak, gum, and loblolly pine than is found on the clay loam type. This vegetation occurs mostly in areas that are not quite so low as those more typically developed.

It is necessary to establish artificial drainage before land of this type can be used. In some places this would be more or less difficult, but the drainage of these areas would be of material value as a sanitary measure. The land could be used for such crops as oats, corn, rice, and sugar cane.

GRADY CLAY LOAM.

The Grady clay loam has a surface soil of gray or drab-gray heavy clay loam to silty clay, with an average depth of about 5 inches. The subsoil is also gray or drab gray, but of a lighter shade than the surface soil, and consists of a heavy, sticky, plastic, impervious clay, mottled with red, yellow, and brown.

There are a number of minor variations in the subsoil, which may be lighter or darker gray and in some places may contain slightly more sand than is typical. In the lower situations the surface soil is also darker, and in places there is an accumulation of mucky material in the first 2 or 3 inches.

This type is developed throughout the central part of the county in which the sink depressions occur. In the vicinity of and north of Camilla the areas are small and have a decided margin, with a drop of 4 to 6 feet below the surrounding lands. As the region of Susquehanna soils is approached, the areas become larger and more irregular in shape, and comprise a greater proportion of the total area of land. Here the areas join more or less, and in places the depressions are connected in series so as to form drainage ways. One of the most conspicuous areas of this type, and one which is of more than local interest, is the Big Slough, which extends from a point just southwest of Camilla southwestward to the Grady County line. Near Camilla it is a narrow strip, but it broadens to a width of as much as three-fourths of a mile about 6 miles northeast of Vada.

This type is poorly drained on account of its topographic position and the fact that the areas usually serve as collection basins for the run-off from the surrounding lands. The water remains on the most of these areas for long periods at a time, and the land becomes sufficiently dry for cultivation only during the driest seasons.

The vegetation differs with variations in the type. Some areas are savannahs and support only a marsh grass, others support a few water oaks or mayhaw, and still others are occupied by cypress, gum, and maple trees. Large water oaks are commonly found around the edges of the areas.

With the exception of the Big Slough, practically none of the type in the county is used in the production of crops on account of the poor drainage. Its chief use is for pastures. If drained, the soil could be used in the production of oats, rice, sugar cane, and corn. The soil, however, would be very heavy and difficult to work, as it is sticky and plastic when too moist and becomes almost too hard to plow when dry. The drainage of these areas would improve the health conditions of the county.

Land of this type usually brings a low price and is generally sold in conjunction with other types.

DUNBAR FINE SANDY LOAM.

The surface soil of the Dunbar fine sandy loam consists of 5 inches of a grayish-brown loamy fine sand with a smooth, velvety texture. This is underlain by a yellow, friable fine sandy clay which extends to a depth of 18 to 24 inches, where it grades into a heavier, slightly plastic fine sandy clay distinctly mottled with red.

The variations within the type as mapped are chiefly in the texture and depth of the surface soil. Some areas in the neighborhood of Camilla carry a relatively large proportion of medium sand and less fine sand and approach a sandy loam in texture.

This type is developed chiefly in the central soil belt of the county. Much of it is mapped in the neighborhood of Camilla and other extensive areas occur west and northwest of Greenough.

The Dunbar fine sandy loam is typically developed in narrow winding depressions occupied by intermittent streams, locally known as sloughs. In many places it is associated with flat areas of the Norfolk sandy loam or fine sandy loam which are more elevated. The natural drainage of the Dunbar fine sandy loam is insufficient during seasons of heavy rainfall, though water seldom stands on the surface for long periods. There is excellent opportunity for artificial drainage by deepening and straightening existing stream ways.

The Dunbar fine sandy loam is not used for cultivated crops because of its poor drainage. It affords good pasture, however, furnishing excellent spring and summer grazing. Where this soil has been properly drained and cultivated it has been found practically equal in value to the Norfolk fine sandy loam, to which it is quite similar. The drainage of the areas of Dunbar fine sandy loam would add hundreds of acres of valuable agricultural land to the productive lands of the county. Drainage would also materially improve health conditions.

The following table gives the results of mechanical analyses of samples of the soil, subsoil, and lower subsoil of the Dunbar fine sandy loam:

Mechanical analyses of Dunbar fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
255142	Soil	0.6	4.1	3.9	33.7	36.6	11.0	10.2
255143	Subsoil	.7	2.4	2.8	28.8	34.6	10.0	21.0
255144	Lower subsoil	.2	1.7	2.5	31.4	28.3	12.9	23.2

CAHABA SANDY LOAM.

The surface soil of the Cahaba sandy loam consists of a brown loamy sand, 5 to 8 inches deep. This is underlain by a light reddish yellow loamy sand to sandy loam which grades into a pale-red sandy clay at about 12 inches.

There is considerable variation within the type as mapped in Mitchell County. Between Baconton and Flint River are areas in which the sandy clay section of the subsoil is 20 inches or more below the surface, and the surface soil is looser and lighter in color and texture. An area 2 miles southwest of Baconton shows a decided reddish-brown color in places in the surface soil following deep cultivation.

The Cahaba sandy loam is found on the high terraces of Flint River, generally in small areas. Larger bodies are mapped in the neighborhood of Baconton. The topography is more variable than is commonly the case in a terrace soil, ranging from level to undulating. Low ridges occur on which the soil consists of lighter variations of the type. Drainage is well established throughout.

Practically all the Cahaba sandy loam is planted to pecan groves. The better parts of the type are regarded as equal to the best pecan soils of the region, and flourishing pecan groves are found where reasonable care and cultivation have been given. The trees are thrifty and bear good crops of nuts of excellent quality. Winter cover crops of oats or rye are often grown between the rows of younger trees. Summer crops so planted are usually legumes—cowpeas, velvet beans, or peanuts.

CAHABA FINE SANDY LOAM.

The surface soil of the Cahaba fine sandy loam is a light-brown loamy fine sand, 4 to 6 inches deep. This is underlain by a yellowish-red loamy fine sand to fine sandy loam which grades into a dull-red heavy clay at 10 to 15 inches. The lower part of the subsoil is mottled red and drab and in many places is stiff and plastic. On the lower terraces the presence of mica is indicated by the slightly greasy feel of the subsoil, and finely divided mica flakes may be seen in the lower part of the 3-foot section.

The Cahaba fine sandy loam is confined to the terraces of Flint River, in the western part of the county. In general it is distributed in small areas from the northern to the southern boundary of the county. One large area lies 2 miles west of Baconton, and another 7 miles northwest of Camilla.

The topography is generally level to gently undulating. In most places this type lies at a lower elevation than the Cahaba sandy loam, though some areas in the immediate neighborhood of Baconton are higher. Surface drainage is, in general, fairly well established, though lower, more level areas may remain wet during periods of rainy weather. Internal circulation of water is slow, due to the compact nature of the subsoil.

Probably 60 per cent of the Cahaba fine sandy loam is cultivated. The uncleared parts from which the mature trees have been cut support a growth of young trees, mostly longleaf pine. These areas afford fair pasturage and are used to a considerable extent for grazing.

The cultivated areas of the type are largely planted to pecan trees. The growth is slow on this soil, but when once established the trees are hardy and bear good crops. The pecan industry of southwestern Georgia has its highest development on this and adjoining terrace and upland soils.

Some general farming is practiced on the Cahaba fine sandy loam. Cotton yields one-fourth to one-half bale per acre, corn, 10 to 25 bushels, peanuts, 30 to 50 bushels. Winter cover crops of rye or oats are often grown between the rows of pecan trees, while peanuts, cowpeas, soy beans, and velvet beans are planted in the groves in summer. Cowpeas are especially well adapted to such use, furnishing a good hay crop or a green-manure crop. In younger groves cotton or corn is commonly planted between the tree rows.

Land values on the Cahaba fine sandy loam depend largely upon location and improvements. Highly developed bearing pecan groves are worth $600 to $1,000 or more an acre. Younger groves are held at lower prices. Unimproved areas in more isolated sections may range in value from $30 to $75 an acre.

KALMIA SAND.

The Kalmia sand has a surface soil of a gray loose sand, which becomes yellowish-gray in the lower part. The average depth of the soil is 6 or 7 inches. The subsoil is a pale-yellow, loose, incoherent sand which continues to a depth of 3 feet without much change. The lower section locally may become more loamy or may grade at a depth of 32 to 36 inches into a light sandy clay, but this gradation is of small extent.

The Kalmia sand is not extensively developed in this county. It is mapped in several areas in the western part of the county along the Flint River. The most important of these lie 3½ and 4 miles northwest of Flint. Each contains about 600 to 700 acres.

The Kalmia sand is derived from old alluvium, which was presumably deposited by the Flint River in an early stage of its development and is now above overflow. The type has a smooth to undulating topography, which is generally characteristic of the terraces of the Flint River. The areas of this soil are much in the form of knolls, slightly elevated above the surrounding Cahaba and Kalmia fine sandy loam. The type is well drained.

The Kalmia sand supports a growth of longleaf pine with scattered oaks. A small proportion of it is now cleared, and the land is utilized in the production of most of the staple crops of the county. The yields are relatively low. Corn ordinarily yields 8 or 10 bushels, peanuts, 12 to 20 bushels, and cotton, one-fifth to one-third bale per acre.

Land of this type is usually sold in conjunction with land of surrounding types, the price depending upon the location and improvements.

The Kalmia sand is a soil which is better suited for the production of special crops than for general farming crops. If market and shipping facilities would warrant their production, it would be desirable to produce on this soil such crops as mature early and for which a price could be secured that would compensate the cost of the large quantity of fertilizer necessary to be used in their production. The improvement of this soil lies in supplying an abundance of organic matter. The soil being very open and loose, is somewhat droughty, and the supply of organic matter would tend to increase its moisture-holding capacity. Commercial fertilizers should be applied in more than one application, on account of leaching.

KALMIA FINE SAND.

The surface soil of the Kalmia fine sand consists of a light-gray to yellowish-gray fine sand which becomes more yellowish in the lower part and ranges in depth from 5 to 7 inches. The subsoil is a bright-yellow, smooth fine sand which in most places continues without much change to a depth of 3 feet. In some places the type contains a larger proportion of the finer grades of material, making it more loamy than typical. In other places, especially on slight rises or sand dunes, it is lighter in color and less coherent. There are also small spots in which the texture of the surface soil is slightly coarser, grading into the Kalmia sand, but these are usually so small that they are not separated on the map.

The Kalmia fine sand is developed generally in small areas on the terraces of the Flint River, especially in the northwestern part of the county, around Baconton. A number of areas occur as natural levees along the Flint River. There are also a number of conspicuous areas in the form of sand dunes. The type in the vicinity of Baconton is associated with the Kalmia fine sandy loam, and almost invariably it will be found occupying the slightly higher parts of narrow ridges, with the fine sandy loam occurring in the lower situations. The difference in elevation is not much more than 5 feet and commonly less than 3 feet. The material comprising this soil is old alluvium, which now stands above overflow. With the exception of the sand dunes, the type has a desirable topography. It is well drained.

Most of the type is cleared and utilized in the production of the various crops of the county. A few areas are still occupied by the native forest growth, which consists of longleaf pine and some oak.

This soil is farmed in conjunction with the Kalmia fine sandy loam. The yields are considerably lower than on the latter type.

KALMIA FINE SANDY LOAM.

The Kalmia fine sandy loam has a surface soil of gray to yellowish-gray fine sand which extends to an average depth of 7 inches. The subsoil, as typically developed, consists of a mellow yellow loamy fine sand which gradually passes into a bright-yellow fine sandy loam and at 18 or 20 inches grades into a bright-yellow, heavy, friable fine sandy clay which is appreciably heavier and tougher than is commonly found in the upland soil types. Throughout the areas of this type there is more or less stratification in the subsoil, which contains layers of fine sand interbedded with fine sandy clay, indicating an alluvial origin. There is also a small admixture of mica in a number of places.

The Kalmia fine sandy loam is derived from old river alluvium, now well above overflow and comprising the terraces of the Flint River. The surface is undulating to gently undulating, with sufficient relief to afford good drainage.

This soil is productive and has a wide crop adaptation. Besides general farm crops, it is well suited to trucking. Its chief need is organic matter, which should be supplied by plowing under leguminous crops.

The Kalmia fine sandy loam is not an extensive soil. It is mapped chiefly in the vicinity of Baconton, where it occurs in association with the Kalmia fine sand. It has a smooth surface and is well drained.

All of this type is cleared and utilized in the production of the common farm crops and pecans. The yields of the staple crops are about like those obtained on the Cahaba fine sandy loam. The pecan trees show a good growth and are productive.

Much of the land of this type commands a high price, chiefly because it lies near the town of Baconton and because a large proportion of it is in pecan groves.

LEAF CLAY LOAM.

The surface soil of the Leaf clay loam is a loamy dark-gray to nearly black clay loam, 5 inches deep. The immediate surface contains much organic matter, the quantity decreasing with depth. The subsoil is a heavy, stiff, plastic clay, drab, or mottled drab, yellow, and pale red. Considerable variation in texture of the surface soil occurs within the type, owing to a variation in the proportion of sand. Smaller areas may be predominantly a sandy loam as a result of the washing in of sand from adjacent slopes.

The Leaf clay loam is of limited extent in Mitchell County, being confined to the terraces of Flint River in the western part of the county. The largest area mapped is north of Baconton. The type occupies poorly drained flats, depressions, and old stream channels.

Only a small proportion is under cultivation, practically all of which is planted to pecans. Tree growth is vigorous and rapid where drainage is sufficient. The Leaf clay loam is a difficult soil to handle because of its heavy texture and poor drainage, but when properly drained and cultivated it is a fertile soil.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Leaf clay loam:

Mechanical analyses of Leaf clay loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
255132	Soil	0.8	3.5	1.9	16.7	23.2	29.3	24.6
255133	Subsoil	.0	.8	.8	8.0	12.7	18.2	59.4

SWAMP.

The areas mapped as Swamp comprise low stream bottoms that are subject to overflow during periods of high water and are wet most of the year. The soil material is quite variable, especially along the smaller streams, but is mainly of fine sandy loam and clay loam texture. The areas along Flint River are dark brown in color, contain considerable undecomposed mica, and represent material recently brought down from the Piedmont region. The vegetation

consists of a thick growth of water-loving trees, shrubs, and vines, including cypress, sweet gum, bay, slash pine, grape, and smilax ("bamboo").

SUMMARY.

Mitchell County is situated in the southwestern part of Georgia. Its area is 506 square miles, or 323,840 acres. The area lies within the Coastal Plain. The topography is level to rolling.

The uplands are generally well drained, though poorly drained sloughs, sinks, and stream ways are numerous.

The population is reported by the 1920 census as 25,588. Camilla and Pelham are the largest towns.

Three railroads provide transportation facilities. A good system of graded sand-clay roads extends over the county. Roads are being extended and improved.

The climate is favorable to a highly diversified agriculture and is marked by short, mild winters and long, warm summers. The rainfall is normally well distributed throughout the year.

The agriculture of Mitchell County is undergoing rapid change and development. The handicaps imposed by an unfavorable economic system and the invasion of the cotton boll weevil are being overcome. The opportunities for diversified farming, the production of special crops, and the development of the live-stock industry, are being appreciated. Farms are being improved and land values are rising.

The value of all crops produced in 1919 was $6,236,601. Cotton is the most important cash crop. The value of this crop in 1919 was considerably greater than the value of the cereal crops. Corn, oats, cowpeas, velvet beans, and peanuts are important field crops. Sweet potatoes, sugar cane, cantaloupes, and watermelons are raised as special crops. An important pecan industry is developing.

Commercial fertilizers are used on practically all crops.

Lands vary greatly in value, according to character of soil, drainage conditions, location, and improvements. The extreme range is possibly from $10 to $1,000 an acre, the latter price for highly improved bearing pecan groves. General farming land of the better types ranges in price from $50 to $150 an acre.

Twelve series of soils are recognized and mapped in Mitchell County. The well-drained upland soils derived from Coastal Plain material are the Norfolk, Ruston, Orangeburg, Tifton, and Susquehanna. Poorly drained soils associated with them are Portsmouth, Plummer, Grady, and Dunbar. The terrace soils, found along Flint River, are of the Kalmia, Cahaba and Leaf series. Swamp includes miscellaneous mixed material found along the stream courses.

The Norfolk soils are extensively developed in the county. The sandy loam and fine sandy loam of the series rank as good farming soils, adapted to the general crops of the region. The Norfolk sand is less productive, but is valuable for special crops. Extensive areas in the western part of the county have a favorable topography and a highly developed agriculture.

The Ruston soils constitute some of the more valuable agricultural land of the county, adapted to and used for the general crops of the region.

The Orangeburg sandy loam is a very valuable soil, largely planted to pecans.

The Tifton sandy loam is generally regarded as one of the best soils of the county. Its distinguishing feature is the presence of numerous small iron concretions on the surface and throughout the subsoil.

The Susquehanna soils are marked by heavy, very plastic clay subsoils. Their topography is generally rolling. They are used to some extent for general farming, but only a small proportion of their area is under cultivation.

The Plummer, Portsmouth, Grady, and Dunbar soils represent poorly drained types, occupying sinks and sloughs, and are not at present under cultivation.

The better terrace soils, the Cahaba sandy loam and fine sandy loam, and the Kalmia fine sandy loam, are largely used for general farming and, in the neighborhood of Baconton, for growing pecans. The Kalmia sand and fine sand are not extensively cultivated, except incidentally with the other types. The Leaf clay loam is naturally poorly drained and difficult to handle, but some areas of it are planted to pecans.

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[PUBLIC RESOLUTION—No. 9.]

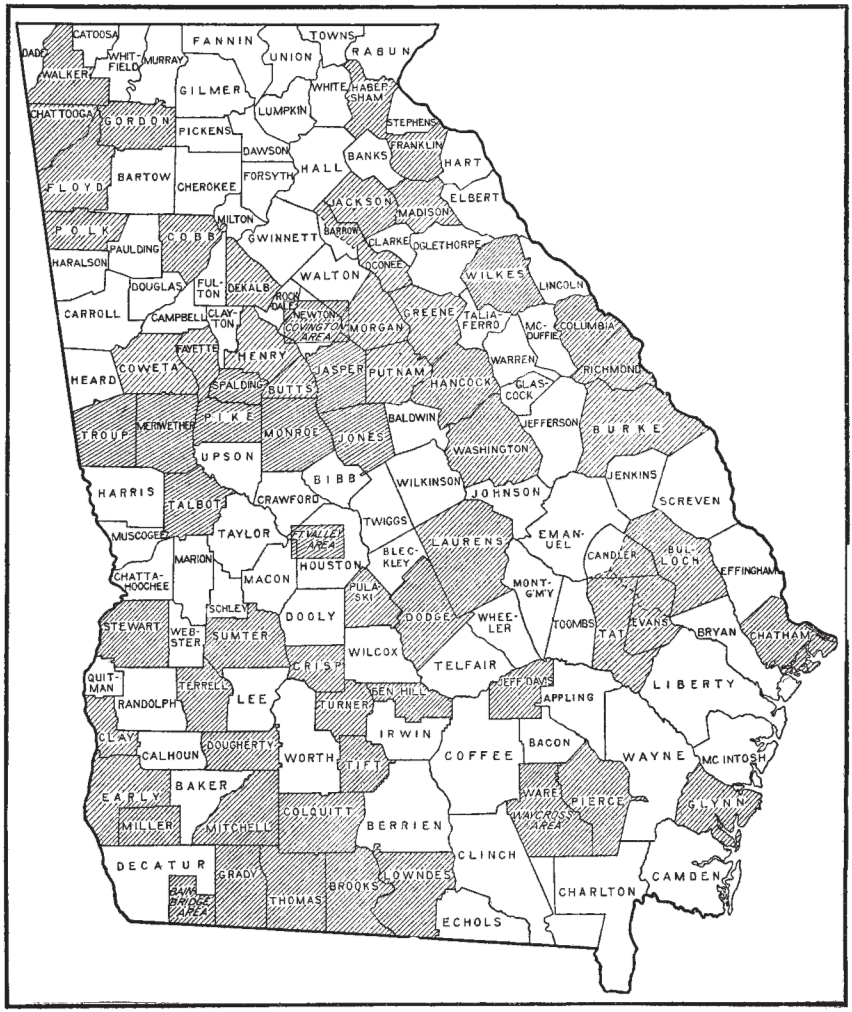
JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, be amended by striking out all after the resolving clause and inserting in lieu thereof the following:

That there shall be printed ten thousand five hundred copies of the report on field operations of the Division of Soils, Department of Agriculture, of which one thousand five hundred copies shall be for the use of the Senate, three thousand copies for the use of the House of Representatives, and six thousand copies for the use of the Department of Agriculture: *Provided*, That in addition to the number of copies above provided for there shall be printed, as soon as the manuscript can be prepared, with the necessary maps and illustrations to accompany it, a report on each area surveyed, in the form of advance sheets, bound in paper covers, of which five hundred copies shall be for the use of each Senator from the State, two thousand copies for the use of each Representative for the congressional district or districts in which the survey is made, and one thousand copies for the use of the Department of Agriculture.

Approved, March 14, 1904.

[On July 1, 1901, the Division of Soils was reorganized as the Bureau of Soils.]



Areas surveyed in Georgia, shown by shading.

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To File a Program Complaint

If you wish to file a Civil Rights program complaint of discrimination, complete the USDA Program Discrimination Complaint Form, found online at http://www.ascr.usda.gov/complaint_filing_cust.html or at any USDA office, or call (866) 632-9992 to request the form. You may also write a letter containing all of the information requested in the form. Send your completed complaint form or letter by mail to

U.S. Department of Agriculture; Director, Office of Adjudication; 1400 Independence Avenue, S.W.; Washington, D.C. 20250-9419; by fax to (202) 690-7442; or by email to program.intake@usda.gov.

Persons with Disabilities

If you are deaf, are hard of hearing, or have speech disabilities and you wish to file either an EEO or program complaint, please contact USDA through the Federal Relay Service at (800) 877-8339 or (800) 845-6136 (in Spanish).

If you have other disabilities and wish to file a program complaint, please see the contact information above. If you require alternative means of communication for program information (e.g., Braille, large print, audiotape, etc.), please contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

U. S. DEPT. OF AGRICULTURE
BUREAU OF SOILS
MILTON WHITNEY, CHIEF
CURTIS F. MARBUT, IN CHARGE SOIL SURVEY

SOIL MAP
GEORGIA
MITCHELL COUNTY SHEET

GEORGIA STATE COLLEGE OF AGRICULTURE
ANDREW M. SOULE, PRESIDENT
DAVID D. LONG, IN CHARGE SOIL SURVEY

LEGEND

- Cahaba sandy loam — Cs
- Leaf clay loam — Lc
- Cahaba fine sandy loam — Cf
- Orangeburg sandy loam — Ol
- Dunbar fine sandy loam — Ds
- Plummer sand — P
- Grady sandy loam — G
- Plummer sandy loam — Ps
- Grady clay loam — Gc
- Portsmouth sandy loam — Pl
- Kalmia sand — K
- Ruston sandy loam — Rs
- Kalmia fine sand — Kf
- Deep phase — Rs
- Kalmia fine sandy loam — Kl
- Pebbly phase — Rs
- Norfolk sand — N
- Ruston fine sandy loam — Rf
- Norfolk sandy loam — Nl
- Susquehanna sandy loam — Ss
- Deep phase — Nl
- Susquehanna fine sandy loam — Sl
- Norfolk fine sandy loam — Ns
- Tifton sandy loam — Tl
- Deep phase — Ns
- Swamp — S

CONVENTIONAL SIGNS

CULTURE
(Printed in black)

- City or Village, Roads, Buildings, Wharves, Jetties, Breakwater, Levee, Lighthouse, Fort
- Secondary roads and Trails
- Railroads — Steam and Electric
- Bridges, Ferry
- R.R. crossings, Tunnel
- Ford, Dam
- School or Church, Cemeteries
- Mine or Quarry, Mine dumps, Made land
- Bluff, Escarpment, Rock outcrop and Triangulation station
- Stony and Gravelly areas
- Soil boundaries
- Boundary lines
- Boundary lines
- Boundary lines
- U.S. township and section lines

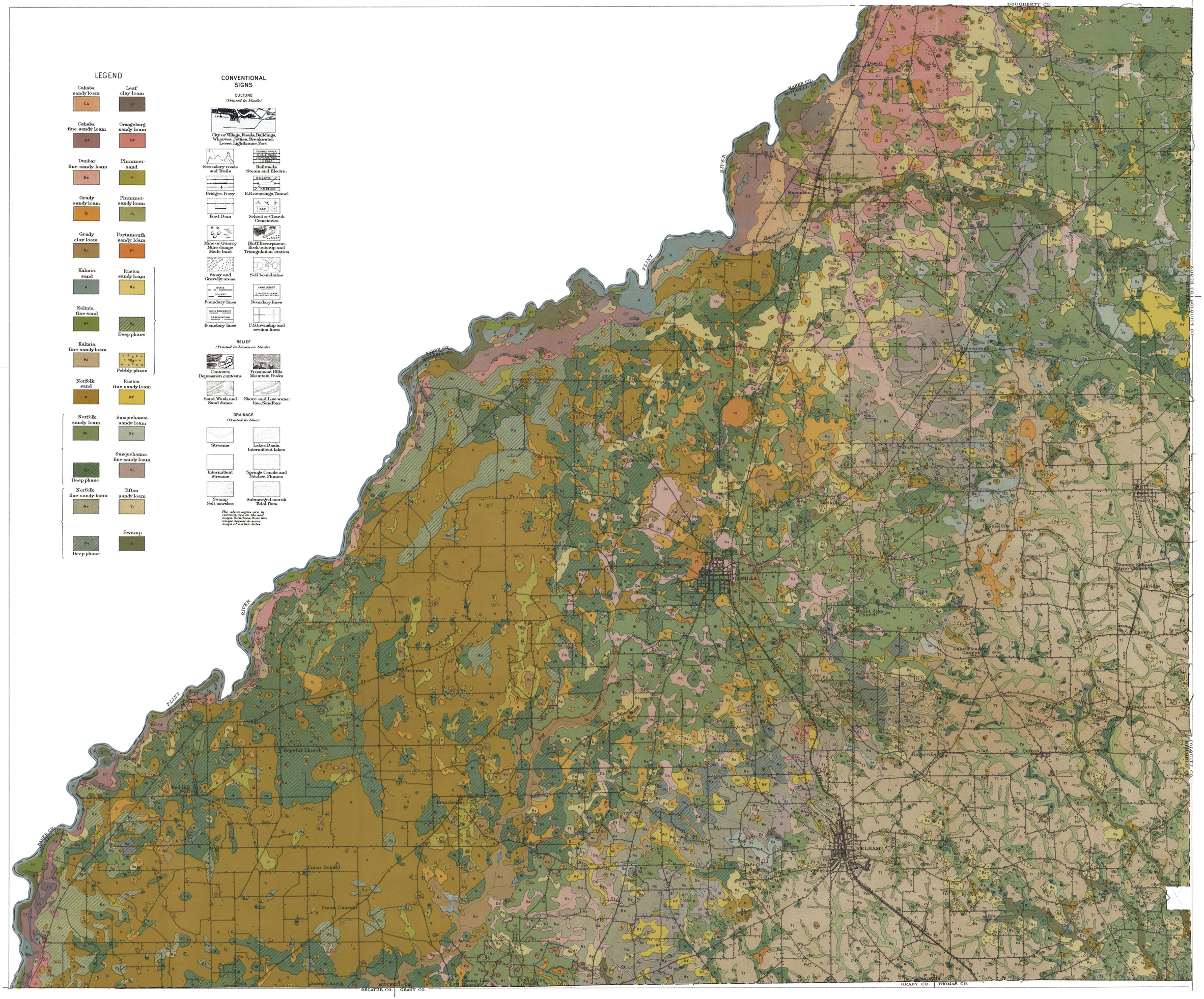
RELIEF
(Printed in brown or black)

- Contours, Depression contours
- Prominent Hills, Mountain Peaks
- Sand, Wash, and Sand dunes
- Shore and Low-water line, Sandbar

DRAINAGE
(Printed in blue)

- Streams
- Lakes, Ponds, Intermittent lakes
- Intermittent streams
- Springs, Canals and Ditches, Flumes
- Swamp, Salt marshes
- Submerged marsh, Tidal flats

The above signs are in current use on the soil maps. Variations from this usage appear in some maps of earlier dates.



W. Edward Hearn, Inspector Southern Division.
Soils surveyed by David D. Long of the Georgia State College of Agriculture, in charge, and Mark Baldwin, Earl D. Fowler, H. W. Hawkes and H. V. Geib of the U. S. Department of Agriculture.

Scale 1 inch = 1 mile

1 ½ 0 1 2 3 4 Miles

WILLIAMS-WEBB CO., WASH., D.C.

Field Operations
Bureau of Soils
1920